

ATTACHMENT II-1

WASTE ANALYSIS PLAN

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ATTACHMENT II-1

WASTE ANALYSIS PLAN

I. GENERAL PROVISIONS AND REQUIREMENTS

1. For each waste stream received at the Facility from an off-site generator (off-site waste), the Permittee shall evaluate the associated Waste Profile Record (WPR) to ensure the waste is acceptable for management prior to signing a hazardous waste manifest for that waste stream. The Permittee shall make waste management decisions based only on proper, accurate, and valid analytical data and information. The requirements for WPRs are outlined in Section II of this Waste Analysis Plan (WAP).
2. At least five representative samples of the waste are to be sent to the Permittee prior to shipment. If both solid and liquid phases are expected, pre-shipment samples should include at least five samples of each phase. Acceptance tolerances for a waste's incoming-shipment acceptance ("fingerprint") parameters shall be established as outlined in Table II-1-1 of this WAP. The tolerances are based on analytical results of the pre-shipment samples. The six fingerprint parameters shall be as follows:
 - a. Matrix pH
 - b. Paint Filter Liquids Test (PFLT)
 - c. Cyanide Test
 - d. Sulfide Test
 - e. Oxidizer/Reducer Test
 - f. Photoionizer ("sniffer") Test
3. If a waste contains both a liquid and solid phase, each phase shall be sampled and analyzed individually in accordance with this WAP.

TABLE II-1-1 ACCEPTABLE PARAMETER TOLERANCES	
Incoming-Shipment	
Acceptance Parameter	Acceptable Tolerances
Matrix pH	Range of the mean ± 2 standard deviations of the pre-shipment sample results
Paint Filter Liquids Test	Pass paint filter liquids test or visually assured of no liquids unless liquids are acceptable
Oxidizer/Reducer Test	Shall match pre-shipment sample results or shall not be an oxidizer or reducer
Cyanide Test or Sulfide Test	Shall match pre-shipment sample result or be non-detectable
Photoionizer (“Sniffer”) Test	Range from non-detectable up to mean ± 2 standard deviations or up to the maximum value of the samples (NOTE- if all of the sample results are less than 10 ppm, the range shall be from non-detectable to <10 ppm)

4. Shipment Receipt and Manifest Requirements
 - a. The manifests or shipping papers shall be reviewed for discrepancies on the date a shipment of waste arrives at the Facility. The manifest shall be signed, and a copy of the manifest shall be provided to the transporter. Manifest discrepancies are described in Section III.1.a. of this WAP.
 - b. The Permittee’s Tracking Number shall be recorded on the manifest.
 - c. All manifest discrepancies observed at the time of arrival at the Facility shall be noted on the manifest.
 - d. Signed manifests (or copies of same) shall be kept on file at the Facility and a copy sent to the generator within 30 days of signing the manifest.
5. Incoming shipments of waste shall be inspected as outlined in Section IV of this WAP.

6. Incoming shipments of waste shall be sampled and analyzed as outlined in Section V of this WAP.
7. Following any holding period and upon receipt into storage, treatment or disposal management, the shipment shall be tracked in accordance with Attachment III-2, *Waste Identification and Tracking Plan*.

(Note: See Attachment III-1, *Container Management Plan* for the definition of the date of arrival and for a description of holding provisions.)

8. Documentation related to sample collection or to on-site laboratory analysis shall be kept in the Operating Record for a period of three years. Off-site analytical laboratory results shall be kept in the Operating Record for a period of five years.
9. The applicable treatment standards for F001-F005 wastes and wastes subject to the Universal Treatment Standards shall be defined as those constituents identified as applicable by the generator. The generator may use acceptable knowledge (58 FR 48111) or analytical testing to identify the applicable constituents; however, analytical results shall be provided to verify that the applicable treatment standards of UAC R315-13-1 have been met or that treatment is required prior to disposal.
10. When a shipment of off-site waste or treatment residue arrives without an accompanying LDR notice or certification, the Permittee shall either obtain a certification for that shipment and note in the Operating Record that the certification did not arrive with the shipment, or the Permittee shall analyze a sample of each waste stream from the shipment prior to land disposal to ensure that the applicable treatment standards of UAC R315-13-1 have been met for each uncertified waste stream.
11. If a waste sample is collected and it is determined at a later time that it does not meet the requirements outlined in this plan (e.g., if a sample is subjected to an extreme heat source or if holding time expires), a replacement sample shall be obtained for analysis in its place.
12. If a waste sample is analyzed and it is determined that it does not meet the requirements for on-site or off-site analysis outlined in this plan, two additional samples shall be collected and analyzed for those parameters that were not met. If the additional samples confirm the first analysis, the procedures for resolving discrepancies outlined in Sections V.5 and V.6 of this WAP shall be followed. If the additional samples do not confirm the results of the first analysis, the original result shall be viewed as an anomaly and the waste may be managed in accordance with this plan.

13. Errors and omissions (e.g., transcription errors, typographical errors, errors in calculations) shall be corrected as information becomes available. These corrections shall be initialed and dated by the person making the correction.
14. Waiver of Sampling or Analysis
 - a. Some wastes do not lend themselves to sampling or to the analyses required by this WAP. (Examples of these wastes include lead bricks, tree stumps, wood, lead shielding, macroencapsulated wastes, concrete, construction debris, building debris, other debris, bricks, sheet metal, discarded containers, metal, sheet rock, wire, plastic waste, wood pallets, glass, gloves, suits, boots, paper towels, etc.) The analyses of such waste may be waived by the Laboratory Supervisor.
 - b. For such waste, alternative sampling methods may be used to obtain samples for analysis at the discretion of the Site Facility Manager, Laboratory Supervisor, or Technical Manager. Some samples may be analyzed for some parameters and waived for other parameters. Where reasonably possible, analyzable samples shall be obtained and run.
 - c. Alternative sampling methods or analytical waivers and approvals for such shall be documented in the Operating Record and shall include a brief description of the alternative sampling methods employed or the reasons for the analytical waiver.
15. Should the Permittee transport treated or untreated wastes to another treatment, storage, disposal or recycling facility, the Permittee shall complete the applicable requirements of UAC R315-13-1.
16. The Permittee shall not accept waste for management when a decision has been made by the Permittee to refuse or reject the waste.
17. The Permittee may perform remote sampling of off-site macroencapsulated wastes as follows:
 - a. The Permittee shall provide the Executive Secretary with at least 14 days notice of its intent to perform remote sampling of off-site macroencapsulated wastes.
 - b. The Permittee's notice of intent to perform remote sampling shall be accompanied by a detailed remote sampling plan. This plan shall include at a minimum, the following information:
 - i. Identity of personnel who will perform remote sampling,

- ii. documentation that personnel who will perform remote sampling have completed all applicable Permittee qualifications and training,
 - iii. a detailed description of remote sampling activities,
 - iv. a copy of the waste profile record for the waste stream to be macroencapsulated off-site,
 - v. documentation that the LDPE Macro or Macro Capsule to be used will meet the applicable requirements of Attachment II-1-5, *Macroencapsulation Plan*,
 - vi. a copy of the off-site macroencapsulation operating procedures, including procedures to fill voids, and
 - vii. if applicable, the generator's RCRA Permit conditions governing macroencapsulation operations.
- c. Remote sampling of off-site macroencapsulation shall meet all incoming-shipment inspection requirements in Section IV.
- d. Remote sampling of off-site macroencapsulation shall meet all sampling and analysis requirements in Section IV.
- e. Off-site macroencapsulated waste that has been remote sampled and found to meet the requirements of this Permit shall have a tamper-evident seal applied and signed by the Permittee's remote sampler.
- f. Upon receipt of remote sampled macroencapsulated waste, the following conditions apply:
- i. The Permittee shall confirm that the tamper-evident seal is present and uncompromised,
 - A. If there is evidence that the tamper-evident seal has been broken, the Permittee shall reject that MACRO form for disposal. Rejected MACRO forms shall be returned to the generator for repair or re-macroencapsulation.
 - B. Alternatively, the Permittee may manage the waste as incomplete or unsatisfactory MACRO in accordance with Section 5.d.ii. of Attachment II-1-5, *Macroencapsulation Plan*.
 - ii. The Permittee shall perform all shipment documentation and non-intrusive receipt inspections required in Section IV.

- iii. The sampling and analysis requirements of Section V are waived.
- iv. All other storage, inspection, and disposal requirements of Attachment II-1-5, *Macroencapsulation Plan*, apply.

II. WASTE PROFILE RECORD REQUIREMENTS

The WPR shall provide the necessary information for management of a waste stream. The following information shall be provided in the WPR:

- 1. A description of the generator, including the generator's:
 - a. Name
 - b. EPA identification number
 - c. Generator Number and Waste Stream Number assigned by the Permittee
 - d. Mailing address
 - e. Business telephone number, a 24-hour emergency telephone number, or both
 - f. WPR contact person
- 2. A description of the waste, including:
 - a. Applicable EPA waste numbers or codes
 - b. Whether the waste includes liquids
 - c. A general indication of the waste's density
 - d. Any distinguishing color or odor
 - e. Applicable LDR treatment standards, California-list prohibitions, or variances, exclusions, etc.
 - f. A statement that the sample used for characterization was representative of the waste
 - g. If sorbents are used, a statement that the sorbents are not biodegradable and what type were used
 - h. Other additional information necessary for determining appropriate management of the waste stream such as:
 - i. chemical, physical, and general characteristics and properties
 - ii. information relating to the waste's generation and history
 - iii. an indication of the possible presence of hazardous constituents such as herbicides, pesticides, infectious wastes, PCBs, etc.
 - iv. information stating that the waste is not air reactive, water reactive, shock sensitive or pyrophoric
 - v. information indicating whether the waste exhibits the characteristics of ignitability, corrosivity, or reactivity as defined in UAC R315-2-9(b)

- vi. an indication of whether or not the waste meets the definition of “Mixed Waste” as defined in Condition I.L. of this Permit.
3. Results of the following analyses:
- a. Paint Filter Liquids Test, (this test may be waived if the generator indicates that the waste is a solid or does not have free liquids based on process knowledge or visual observation),
 - b. pH, soil pH, or Matrix pH,
 - c. total sulfide or sulfide reactivity,
 - d. total cyanide or cyanide reactivity, (total and amenable cyanide results are required when the reactive cyanide result or the total cyanide result is greater than 50 mg/kg),
 - e. analytical results of the applicable concentration-based treatment standards,
 - f. analytical results that show the waste is hazardous (e.g., TCLP Cr for D007) or a descriptive declaration that the waste is hazardous and the basis for that determination,
 - g. The most current version SW-846 8260 and 8270. Each constituent listed in Appendix III of 40 CFR part 268 shall be reviewed and/or analyzed to ensure that the Halogenated Organic compound (HOC) concentration is less than 1,000 mg/kg.

(Note: For the purposes of this requirement, total results on a dry weight basis may be used to show that a waste is not toxic. The total results will be divided by a conversion factor of 15 mg/kg in order to determine whether a TCLP limit has the possibility of being exceeded. For example, an analytical result of 75 mg/kg for Ag on a soil sample would demonstrate that the characteristic limit of 5 mg/l TCLP Ag would not be exceeded.)

4. The analytical data used by the generator for the WPR shall meet the following requirements:
- a. Analytical results shall be accepted only from the laboratories as follows:
 - i. Laboratories that hold a current National Environmental Laboratory Accreditation Conference (NELAC) accreditation,
 - ii. Laboratory certified by the Utah Department of Health (UDOH) insofar as official certifications are given,
 - iii. Laboratories with reciprocity with the State of Utah for the parameter being analyzed,

- iv. Laboratories that are certified in a state that has been determined by the UDOH to have a laboratory certification program equal to or more stringent than Utah's, or
 - v. Laboratories providing the results to or through the U.S. Environmental Protection Agency, provided that the results are from a CLP laboratory.
- b. If a laboratory certification other than those listed in II.4.a.i-v is used, the Permittee shall require the generator to supply as part of pre-acceptance and analytical documentation, the most current QA/QC system and performance audit documents that pertain to analytes of concern. Such data may be used for purposes of this WAP only if and when that data is accompanied by the following documentation:
 - i. Results of quality control samples from the same run (set of samples) in which the sample was run,
 - ii. Results must include acceptable ranges and must clearly show that the data was in control, and
 - iii. Quality control samples shall include all those required by SW-846 or other methods approved by the U.S. EPA.
- 5. The Permittee may provide information for a generator's WPR in coordination with the generator, for such items as sample data, etc.
- 6. When the Permittee is notified by the generator that the process generating the waste has changed, the Permittee shall update the WPR. If, as a result of this notification the waste stream has any different EPA waste codes or treatment standards that require the waste to be managed in a different manner, the Permittee shall obtain a new profile for that portion of the waste as a separate waste stream.
- 7. A new profile shall include a new WPR with its set of analytical results, fingerprint samples, and incoming-shipment tolerances.
- 8. When one calendar year (no more than 365 days) has passed since the arrival of the initial shipment of waste at the facility, the Permittee shall obtain an updated WPR or a letter of update from the generator. A letter of update means that the generator provides a written statement to the Permittee as to whether the existing WPR is still representative of the waste.
 - a. An annual update shall be required for waste streams that have on-going shipments. When the entire waste stream has been received, and no future shipments will arrive, an update is not required.

- b. If a waste stream has shipments that have been temporarily suspended so that a period greater than one calendar year has passed since the arrival of the first shipment, an update is required prior to resuming shipping.
- 9. When the Permittee has reason to suspect that the process generating the waste or waste stream has changed, the Permittee shall contact the generator and update the WPR as necessary.
- 10. New WPRs and WPR updates that are required by this plan shall be documented in the Operating Record.

III. DISCREPANCIES AND DISCREPANCY RESOLUTION

- 1. Description of Discrepancies. The types of discrepancies that shall be reviewed and require corrective action are described below:
 - a. Manifest Discrepancies:
 - i. Manifest incompleteness
 - ii. Container count or shipment weight discrepancies
 - A. The Permittee shall use the following criteria to determine whether a count/weight discrepancy exists between the manifest and shipment:
 - (1). For bulk wastes, variations greater than ten percent in weight.
 - (2). For containerized wastes, any variation in piece count, such as a discrepancy of one drum in a truckload.
 - iii. Absence of required LDR notices or certifications
 - iv. Waste Codes listed on the Manifest and applicable Waste Codes listed on the LDR that do not match
 - v. Manifest errors (telephone number, addresses, EPA identification number, names, etc.)
 - b. Inspection Discrepancies:
 - i. Free liquids present where not anticipated
 - ii. Damaged, leaking, or open containers
 - iii. Waste outside of the container
 - c. Appearance Discrepancies:

- i. Different appearance than is described in the WPR
 - d. Analytical Discrepancies:
 - i. Incoming-shipment analytical results for the waste are beyond the established tolerances for one or more of the fingerprint parameters.
- 2. Discrepancy Resolution.
 - a. Where discrepancies are identified, the discrepancies shall be noted in the Operating Record and resolved with the generator. Discrepancies shall be addressed or resolved prior to treatment or disposal.
 - b. Shipments with discrepancies may be placed in storage pending resolution.
 - c. A shipment with unexpected free liquids shall be managed in accordance with Attachment II-1-4, *Liquid Waste Management Plan*.
 - d. After discrepancies have been addressed or resolved, the shipment shall be stored, treated, or disposed in accordance with the applicable provisions of this Permit or returned to the generator.
 - e. Discrepancies, such as typographical errors that are overlooked or discovered at a later date, shall be resolved by making corrections as information becomes available. Corrections shall be initialed and dated.
 - f. Should a shipment involve containers that are open, leaking, or when the integrity of the container is compromised or damaged, the Permittee shall manage the affected waste so that the shipment no longer has open, leaking, or compromised containers and either:
 - i. manage the shipment in accordance with the requirements of this plan, or
 - ii. arrange for the return of the shipment.
 - g. Appearance discrepancies may be resolved with the generator by either:
 - i. adding information to the WPR, or
 - ii. arranging for the return of the shipment.

- h. If the Permittee accepts a waste with a discrepancy and the discrepancy is not resolved with the generator within 15 days after the waste has been accepted for sampling, the Permittee shall submit to the Executive Secretary, a copy of the manifest or shipping paper and a letter describing the discrepancy and attempts to reconcile it by the end of the 18th day following acceptance for sampling. Within 30 days of resolution, the Permittee shall submit to the Executive Secretary, a written description of the discrepancy resolution, including supporting documentation.
- i. When corrections or information are added to the manifest by the Permittee, initials and a date shall be included with the notation.

IV. INCOMING-SHIPMENT INSPECTION REQUIREMENTS

- 1. File Review. In conjunction with each waste shipment or shipment campaign, a file review shall be conducted to ensure that:
 - a. There is a current WPR in the Operating Record as noted on form EC-525.
 - b. The Waste Codes listed on the Manifest match the applicable Waste Codes listed on the LDR.
 - c. Results of pre-shipment samples for fingerprint parameters have been completed.
 - d. Tolerances for fingerprint parameters have been established.
 - e. Inspectors are familiar with the WPR.
- 2. Shipment Inspection:
 - a. The Permittee shall perform an inspection of each shipment and shall document the results of that inspection in the Operating Record. This inspection shall include checking for Manifest Discrepancies, Inspection Discrepancies, and Appearance Discrepancies as described in Section III.1 of this WAP.
 - b. Each container and each bulk shipment shall be visually inspected for the presence of free liquids and for appearance discrepancies. Discrepancies shall be documented in the Operating Record.
 - c. Respirators with cartridges for organic vapors (e.g., HEPA combination cartridges) shall be worn during the inspection of a container's contents,

unless alternative respiratory protection or protective measures, as specified by the Permittee's safety officer, are followed.

V. SAMPLING AND ANALYSIS REQUIREMENTS

1. Sample Collection. Samples shall be obtained as outlined in Section VII of this WAP.
2. Sample Collection Deadlines.
 - a. On-site sampling and analysis of waste in rail cars shall occur within five days of arrival at the Permittee-operated spur.
 - b. For rail shipments, if the analytical results indicate that the waste in holding is not acceptable, additional samples shall be collected and sent for analysis within five days of receipt of the analytical results, or the waste shall be returned to the generator or transported to another treatment, storage, or disposal facility within 15 days of receipt of analytical results.
 - c. For highway shipments, samples shall be collected within five days of arrival.
 - d. Samples taken from incoming shipments shall be submitted to off-site laboratories within two working days from the date that the sample is collected.
3. For each waste stream, a sample of waste, from the following shipments shall be analyzed for the parameters listed in Section V.4 of this WAP as indicated:
 - a. The first shipment to arrive at the site.
 - b. Shipments with fingerprint results that exceed one or more of the established tolerances. If pH is the only parameter to exceed the established tolerance, the discrepancy may be resolved through consultation with the generator. However, if the pH is ≤ 2.0 or ≥ 12.5 the analysis must be performed. Justification of discrepancy resolution shall be documented in the Operating Record.
 - c. Annually for Non-Treated Wastes. For off-site wastes that have not been treated to meet LDR treatment standards prior to arrival at the facility:
 - i. the first shipment following or any one shipment prior to the one-year anniversary date of the most recent shipment that was

sampled and analyzed for the requirements in Section V.4 of this WAP.

- d. Semi-Annually for Treatment Residue Wastes. For wastes that have been treated to meet LDR treatment standards prior to arrival at the facility:
 - i. the first shipment following or any one shipment prior to the date six months after the most recent shipment that was sampled and analyzed for the requirements in Section V.4 of this WAP.
 - e. If a new code is added to the waste following the procedures in Section V.5 of this WAP, the next shipment following that addition shall be sampled and analyzed for the parameters in Section V.4. of this WAP.
 - f. For purposes of the requirements in Sections V.3.c and V.3.d of this WAP, a sample from a specified shipment may be replaced by a sample from a shipment among a set of available shipments, provided that the shipment that is selected for sample substitution arrives within three days of the date of arrival of the specified shipment.
 - g. For purposes of the requirement in Section V.3.b., above, if several shipments arrive the same day and have an analytical discrepancy for the same fingerprint parameter, a representative sample from those with the discrepancy may represent these shipments as a group.
4. The following parameters shall be analyzed by a Utah-certified laboratory, utilizing the methods specified in Section VI.3 of this WAP:
- a. Total metals analysis for antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and vanadium.
 - b. Total and amenable cyanide.
 - c. Volatile and semi-volatile organics.
 - d. The applicable extract concentration or total concentration-based treatment standards.
5. Reconciling analytical data and discrepancies from results required by Sections V.3 and V.4 of this WAP.
- a. The Permittee shall review and reconcile the results with input as necessary from the generator or the generator's designated agent, to ensure that hazardous waste codes have been properly established and whether additional hazardous waste codes are to be added to the WPR. If the results are consistent with the current waste profile record, the generator need not be contacted.

- b. For total concentration-based results that could exhibit characteristics that are not currently associated with the waste, TCLP analyses shall also be run on the sample of the waste stream to verify whether the waste unexpectedly exhibits those characteristics. For purposes of this requirement, the total results based on dry weight shall be divided by a conversion factor of 15 mg/kg in order to determine whether a TCLP limit has the possibility of being exceeded. For example, a result of 75 mg/kg or greater for Ag would require a TCLP analysis for Ag since the hazardous waste characteristic limit for Ag is 5 mg/l. Use of this conversion is applicable only to solid-phase wastes.
 - c. The evaluation shall address analytical results that show the presence of concentrations of listed waste constituents (e.g., F001-F005 solvent constituents) that were not addressed as part of the WPR evaluation in terms of whether additional waste codes or treatment standards would be applicable.
 - d. If the results show that treatment is required prior to disposal, the Permittee shall arrange for such treatment. If treatment on-site cannot be arranged, the waste shall be sent to an appropriate treatment, storage, or disposal facility or may be returned to the generator, based on the generator's instructions.
 - e. While awaiting the first round of these sample results, shipments shall not be treated or disposed. However, for the annual or semi-annual confirmation sampling of bulk waste, the corresponding shipment of waste may be kept in the landfill cell provided that the waste is prevented from commingling with other wastes. The waste shall not be covered with other waste, or placed in a lift prior to the receipt of these results. If the results indicate the waste needs to be treated prior to disposal it shall be moved to treatment or storage within five days of receipt of analytical results. Waste tracking shall be conducted in accordance with Attachment III-2, *Waste Identification and Tracking*.
6. Reconciling analytical results and discrepancies from on-site fingerprint analyses.
- a. If a new WPR is needed as part of reconciling an analytical discrepancy, fingerprint tolerances shall be established based on five samples of this new waste stream.
 - b. If it is determined through consultation with the generator that tolerances for the parameter were not adequately established, the generator may send additional samples to re-establish the acceptance tolerances for that parameter. Samples for this adjustment may come from the shipment

with the analytical discrepancy or from the generator. Some of the current pre-shipment results or previous incoming-shipment results for the history of the waste stream may also be used.

- c. As a result of consultation with the generator, it may be determined that the shipments are acceptable but that re-establishment of tolerances is not recommended. However, re-establishment of tolerances for the parameter shall be required in the event that two or more consecutive shipments of the waste are accepted with justification for a parameter being beyond the acceptable tolerance range. The new tolerances shall be in place prior to accepting more than two consecutive shipments of a waste with a parameter beyond the currently established tolerances.
- 7. If an analytical discrepancy cannot be resolved, the shipment shall be rejected. Rejected waste shipments shall be returned to the generator or forwarded to an appropriate treatment, storage or disposal facility, based on the generator's instructions.
- 8. If it is determined that the waste with an analytical discrepancy had been misplaced, mislabeled, or otherwise mismanaged, or is actually another waste that had already been profiled for acceptance at the facility, such waste shall be properly labeled and accepted through the established tolerances for the correct waste. Investigation and corrective measures shall be implemented to ensure proper management of the affected waste.
- 9. Notations shall be added to the WPR and Operating Record as necessary to reconcile the analytical discrepancy.

VI. ANALYTICAL METHODS

- 1. Methods for the following required WPR Analytical Parameters:
 - a. Determination of free liquids based on visual observation or Paint Filter Liquids Test, SW-846 9095 or most current SW-846 method.

This parameter was selected so that preparations for liquid waste management may be arranged or so that shipments with unexpected free liquids may be avoided. During completion of the WPR, if the generator determines, as a result of visual observation and knowledge of the waste, that free liquids are present or not present in the waste, then the test for free liquids need not be completed as a required test.

- b. pH, soil pH, or Matrix pH, SW-846 9040 and/or 9045 or most current SW-846 method.

These pH parameters were selected as a general profile parameter.

- c. Reactive Cyanide Chapter 7 test method or Total Cyanide SW-846, SW-846 9010 or 9012 (adapted for solids as applicable) or most current SW-846 method.

These cyanide parameters were selected to profile the waste for the characteristic of cyanide reactivity.

- d. Reactive Sulfide or Total Sulfide SW-846 Chapter 7 test method or most current SW-846 method.

These sulfide parameters were selected to profile the waste for the characteristic of sulfide reactivity.

- e. Applicable treatment standard parameters, current SW-846 methods.

These parameters were selected to profile the waste in terms of its applicable concentration-based treatment standards to show whether the waste meets those standards or would require treatment.

- f. Parameters for which the waste is hazardous or a descriptive declaration that the waste is hazardous and the basis for that determination.

These parameters or declarations were selected to profile the waste in terms of its applicable hazardous waste codes. A generator may stipulate that a waste has hazardous waste codes without supporting analytical results so long as the basis for that determination is provided.

- g. Organics SW-846 8260 and 8270 or most current SW-846 method.

These parameters were selected to establish whether a waste remains subject to the California-list prohibition for 1,000 mg/kg of halogenated organic compounds in UAC R315-13-1.

(Note: The Third LDR rules supersede most of the California-list prohibitions.)

- h. The Permittee may include the results of other test methods as necessary to profile the waste.

2. Required incoming shipment on-site analyses:

The on-site incoming-shipment or fingerprint analyses were selected for use with the tolerance ranges as outlined in this WAP to confirm that an incoming-shipment waste matches the waste that was profiled during the pre-shipment fingerprint process. Additional rationale for these fingerprint parameters is provided below.

- a. The Matrix pH Test shall provide data for compatibility management strategies.
 - b. The PFLT shall determine whether a shipment contains free liquids and is also used for such purposes as outlined in this WAP. The test for free liquids may be waived if it is determined as a result of visual observation that free liquids are not present, or that expected free liquids are present.
 - c. The Oxidizer/Reducer Tests shall provide data for compatibility management strategies and as a basic incoming-shipment screening parameter.
 - d. The Cyanide Test and Sulfide Test shall be a pre-shipment indicator for the presence of reactive constituents in the waste and shall provide data for compatibility management strategies.
 - e. The Photoionizer ("Sniffer") Test shall be a pre-shipment indicator for organic waste and shall provide data for compatibility management strategies.
3. Required Incoming shipment off-site analyses:
- a. Total metals analysis (antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and vanadium), shall be followed by TCLP for verification when a characteristic waste is possible. (current SW-846 methods)

These parameters shall provide a facility verification of the metals content of the waste and to verify that the hazardous waste codes for the corresponding characteristics for metals were properly established.
 - b. Total and amenable cyanide. (SW-846 Method 9010 or 9012 or most current SW-846 method)

These parameters shall provide a facility verification of the cyanide content of the waste and to verify that the hazardous waste codes for the corresponding characteristic for cyanides were properly established.
 - c. Volatile and semi-volatile organics, possibly followed by TCLP for verification. (SW-846 8260, SW-846 8270, or most current SW-846 method)

These parameters shall provide a facility verification of the organics content of the waste and to verify that the hazardous waste codes for the corresponding characteristic for organics were properly established.

- d. The applicable concentration-based treatment standards (current SW-846 methods)

These parameters shall provide a facility verification of the applicable treatment standards of the waste.

VII. QUALITY ASSURANCE AND QUALITY CONTROL REQUIREMENTS

1. Organizational Requirements

Senior Vice President of Compliance and Permitting

The Senior Vice President of Compliance and Permitting receives the quality assurance report described in this plan. The Senior Vice President of Compliance and Permitting may provide written authorization to allow an audit to remain open beyond the calendar quarter when requested by the Corporate Quality Assurance Manager (QAM).

Site Manager

The Site Manager shall be responsible for implementing operations at the South Clive site. The Site Manager directs the duties of the operators at the site. The Site Manager may act as the Laboratory Manager in his/her absence.

Corporate Quality Assurance Manager (QAM)

The QAM shall oversee the quality performance of the laboratory through quarterly audits and a report to the Senior Vice President of Compliance and Permitting. The QAM may request that an audit remain open beyond a calendar quarter. The QAM shall be informed of the necessity of corrective actions. Upon determining that corrective actions are required, the Environmental Engineer or QAM shall outline the corrective action, complete the investigation, and determine when the corrective action has been effective and is complete.

Environmental Engineer

The Environmental Engineer shall provide technical direction of laboratory operations. The Environmental Engineer may direct inspections of the on-site laboratory system and performance. The Environmental Engineer shall be informed of the necessity for corrective actions. Upon determining that corrective actions are required, the Environmental Engineer or QAM shall outline the corrective action, complete the investigation, and determine when the corrective action has been effective and is complete.

Laboratory Manager

The Laboratory Manager shall be responsible for daily operations of the on-site laboratory. The Laboratory Manager shall interface with the Environmental Engineer and QAM for technical and quality assurance concerns. The Laboratory Manager shall direct the incoming and pre-shipment sampling and analysis. The Laboratory Manager shall review maintenance records for laboratory equipment and determine preventative maintenance schedules according to the manufacturer's recommendations.

Laboratory Technician

The Laboratory Technician shall report to the Laboratory Manager and analyze the samples from incoming shipments. The Laboratory Technician shall perform analyses on the samples sent from generators to establish the tolerances for accepting the waste shipments.

Sample Control Officer

The Sample Control Officer shall be responsible for the sampling and tracking of incoming shipments for on-site and off-site analysis. The Sample Control Officer shall direct the shipping of samples for off-site analysis.

2. Waste Sample Requirements

a. Required Sample Handling and Preservation Procedures:

- i. Samples for analyses at an off-site laboratory shall be collected in sampling containers and with the preservation provided by or as specified in the applicable method.
- ii. Fingerprint samples that are analyzed in accordance with the requirements of this WAP do not require special preservation.
- iii. Sample containers shall be labeled and, following sample collection, shall be closed and remain closed until they are ready to be analyzed.
- iv. During and following sample collection, care shall be taken to keep samples from being exposed to environments of extreme heat, moisture, or solar radiation, etc.
- v. Samples collected for fingerprint analyses shall be analyzed within 24 hours of sample collection.

b. Required Sampling Methods:

- i. Personnel obtaining samples from incoming shipments may use guidance from the methods and comments outlined in 40 CFR 261 Appendix I in selecting which device to use.
- ii. A sample from an incoming shipment shall be obtained by using one or more of the following devices: a shovel, spade, scoop, thief, trier, auger, sampling tube (Shelby or split tube), or using alternative methods as outlined in Section I.2 of this WAP.

c. Required Sample Collection:

- i. For each waste stream, at least the minimum number of samples collected per shipment shall be obtained for fingerprint analysis as specified below:

- A. Bulk Railcar Shipments: Six aliquots from random locations, composited into one sample.
 - B. Bulk Highway Shipments: Four aliquots from random locations composited into one sample.
 - C. Container Shipments (rail or highway): One sample for each ten percent of the containers on a shipment. Containers from which these samples are taken shall be randomly selected from all of the containers on a shipment.
 - D. A sample shall be composited by placing collected aliquots together in a container or mixing bowl and mixing them with a stirring device until the sample material is thoroughly mixed.
 - E. The Sniffer Test shall be performed on a composite sample prior to mixing.
- ii. For purposes of sampling and analysis, a highway shipment with a truck and a pup shall be considered two separate shipments. Each railcar shall be considered a separate shipment.
 - iii. Random numbers shall be selected from Table II-1-4 of this WAP or from use of an electronic random number generator.
- A. The containers on a shipment shall be numbered, or bulk waste is “divided” into sampling sites that are assigned numbers.

For bulk sampling sites, a shipment shall be “divided” into somewhat equal volumes to include possible sampling locations at varying depths in the bulk shipment. The length, width, and depth dimension for rail car divisions shall be made so that there are approximately 40 “divided” volumes of equal size including volumes at different depths. When objects are shipped as bulk in a rail car, the objects may be used for random selection.

For bulk highway shipments, a shipment is similarly divided so that there are approximately 12 volumes including volumes with varying depths in the shipment.

- B. A digit from the random number table shall be selected.

- C. Starting from the selected digit and reading from that point on the table, two-digit random numbers are identified. Identified random numbers that match container numbers or bulk location numbers shall be selected in order to obtain the required number of samples or aliquots.
 - D. Samples or aliquots shall be obtained from containers or bulk location sites with numbers that match the selected random number.
 - E. The random numbers selected for sampling shall be documented in the Operating Record.
- d. Containment of a Sample
- i. Samples shall be placed in a sample container as provided or of a type directed by the analytical laboratory.
 - ii. A sample container shall have the following characteristics:
 - A. The container shall be free from contaminants to a degree that a false positive or a false negative outcome for waste management would not be produced, based on the results of analysis, compared to an uncontaminated container.
 - B. The container shall be plastic or glass and able to withstand routine sampling procedures without being destroyed in the process.
 - C. The container shall be of a volume comparable to the volume of the sample to be taken. Specifically, non-debris samples shall not be less than 20% of the working volume of the container.
 - D. The container shall be able to be closed in such a manner that material may not enter or escape the closed container.
- e. Sample labeling
- i. Sample labels or markings shall be affixed to or provided on the sample container at the time of sampling.
 - ii. Such sample labeling shall include the following information:

- A. the Generator Number,
 - B. the Bates Number or Shipment Number,
 - C. the date and time of sample collection,
 - D. the initials of the sample collector, and
 - E. the container number or sample location.
- f. Sampling Safety
 - i. Safe sampling practices shall be employed for the gathering of all samples. Safe work practices shall be followed during all waste shipment sampling activities including but not limited to the wearing of appropriate:
 - A. protective clothing,
 - B. shoes,
 - C. gloves,
 - D. hard hat,
 - E. respirators, and
 - F. protective eye wear.
 - ii. Sampling shall be performed after personnel have checked the manifest and are familiar with the WPR.
- g. Sample Equipment Decontamination
 - i. After each sampling event, the sampling equipment shall be decontaminated, as necessary, to ensure that it is visually free of any residue.
 - ii. The equipment shall then be rinsed with water.
 - iii. Cleaning shall be followed with a final rinse of distilled or deionized water.
 - iv. The equipment shall then be air dried or dried with paper towels.
 - v. Waste generated during decontamination shall be placed back with the generator's waste, or managed as the Permittee's waste.
- h. Chain-of-Custody
 - i. Chain-of-custody management shall be required for all samples.

- ii. A chain-of-custody record shall be completed by the sampler prior to relinquishing custody of the sample. The following requirements shall apply to the chain-of-custody record:
 - A. The chain-of-custody record shall accompany the sample until final disposition.
 - B. As the information becomes available, the following information shall be provided on the chain-of-custody record:
 - (1) Name of the sample collector
 - (2) Signature of the sample collector
 - (3) Date and time of sample collection
 - (4) Generator Number
 - (5) Waste Stream Number
 - (6) Bates Number or shipment number
 - (7) Signature of each sample custodian
 - (8) Date and time of changes of custodianship
 - (9) Date and time the sample was received at the laboratory
 - (10) Sample type (composite, discrete)
 - (11) Preservation (if necessary)
 - C. Copies of chain-of-custody records shall be kept in the Operating Record for a period of five years.
- iii. If the sample leaves the custody of the sampler prior to the samples relinquishment to the laboratory, sample seals shall be placed in such a manner as to secure the opening of the outermost sample container.
- iv. Seals shall be required if a sample leaves the sample collector's custody prior to receipt of the sample at the laboratory.
 - A. When a paper seal is used, the following information shall be provided on the seal:
 - (1) The sampler's initials
 - (2) The date of sample being sealed
 - B. When a seal is used that does not lend itself to written identification, no identifying information is required for the seal.

- C. When seals are used, the seals shall be affixed to the sample container or package to secure the opening before the sample leaves the custody of the sample collector.
- v. For chain-of-custody management, a sample shall be considered in custody when one or more of the following conditions are met:
 - A. The sample is in the custodian's physical possession.
 - B. The sample or sample container is in view of the custodian.
 - C. The sample is secured or monitored by the custodian so that no one can gain access to the sample without being detected by the custodian.
- vi. Once the sample has been taken to the on-site laboratory, its receipt shall be recorded in the laboratory logbook.

TABLE II-1-2
 CALIBRATION AND QUALITY CONTROL SCHEDULE

PARAMETER	Required Frequency	PROCEDURE	DOCUMENTATION
pH Meter Calibration	Every 3 hours or 10 analyses	Check/Recheck Calibration	Record in Laboratory Notebook
pH Meter Duplicate	Every 3 hours or 10 analyses	Run a duplicate sample	Record in Laboratory Notebook
pH Meter Rinse and Inspection	Between each sample	Rinse/inspect; wipe electrode if necessary	None required
Paint Filter Duplicate	Once each day the test is run	Run a duplicate sample	Record in Laboratory Notebook
Oxidizer/Reducer Test Control Check	Once each day the test is performed	Run potassium nitrate or nitric acid and sodium sulfite or sodium thiosulfite.	Record in Laboratory Notebook
Ox/Red Test Duplicate	Once each day the test is performed	Run a duplicate sample	Record in Laboratory Notebook
Cyanide/Sulfide Test Quality Control	Once per week ensure that the tubes are out of direct sunlight	Tubes shall be used within the expiration date. Check the bellows for leaks by suction and pressure	Record in Laboratory Notebook
Cyanide/Sulfide Duplicate	Once each day the test is performed	Run a duplicate sample	Record in Laboratory Notebook
Photoionizer "Sniffer" Test Quality Control	Every 3 hours or 10 samples	Run a duplicate sample	Record in Laboratory Notebook
Photoionizer "Sniffer" Test Quality Control	Every 3 hours or 10 samples	Standardize sniffer with calibration glass	Record in Laboratory Notebook
Photoionizer "Sniffer" Test Quality Control	Run a blank on non-glass containers prior to use.	Run a blank on non-glass container	Record in Laboratory Notebook

3. Required Sample Preparation for Fingerprint Analysis
 - a. For all analytical procedures, the temperature of the sample shall be greater than 10°C (50°F) at the time of analysis.
 - b. When the temperature of the sample is below the minimum temperature, the sample shall be warmed by exposure to room temperature, by manual manipulation of the sample, or by exposure to an incandescent warming lamp, provided that the lamp remains at least eight inches from the sample when illuminated. The sample shall not be heated in a microwave or convection oven.
4. Calibration Requirements
 - a. The photionization detector and pH meter shall be calibrated prior to the first sample analysis of the day, and test method duplicates and quality control measures shall be performed as outlined in Table II-1-2 of this WAP.
 - b. Standards used in calibration shall be checked prior to the first analysis of the day to ensure that the expiration dates have not been exceeded.
 - c. Calibrations shall be recorded in the laboratory notebook.
5. Required Preventive Maintenance:
 - a. A record shall be kept of maintenance records for the pH meter, the photoionizing detector, and the Drager tube equipment documenting that the equipment has been maintained in accordance with the manufacturer's recommended maintenance procedures and frequency.

TABLE II-1-3
 QUALITY ASSURANCE REQUIREMENTS

MEASUREMENT PARAMETER	Reference (Method)	Experimental Conditions	Precision	Accuracy	Completeness
Soil pH	EC-0700	Soil (solid) Water Slurry of waste sample	(+/-) 0.3 pH units	(+/-) 0.3 pH units	100%
Paint Filter Liquids Test	EC-0725	Waste sample	Pass/Fail	N/A	100%
Cyanide	EC-0750	Vapors from Acidified Waste Sample	Detected/Not Detected	N/A	100%
Sulfide	EC-0750	Vapors from Acidified Waste Sample	Detected/Not Detected	N/A	100%
Red/Ox	EC-0775	Solid/Aqueous Solution Mixtures	Red/Ox/Neither	Red/Ox/Neither	100%
“Sniffer”	EC-0800	Vapors above or Liberated from Waste	20% (+/-)	5% (+/-)	

6. Requirements for Precision, Accuracy, and Completeness

- a. Table II-1-3 lists the requirements for accuracy, precision, and completeness.
- b. The precision, accuracy, and completeness of data shall be assessed and documented on a quarterly basis as outlined in Section 9 of this WAP.
- c. The following definitions apply to this WAP:
 - i. Precision. Duplicate/replicate sample analyses shall be used to assess precision. Precision shall be defined as a comparison of a sample result to the result of the sample’s duplicate or replicate.

$$\text{Precision} = \text{range/mean} * 100$$

- ii. Accuracy. Accuracy shall be defined as a comparison of the result of an analysis of a fingerprint standard to the known value of the standard.

$$\text{Accuracy} = \text{value found/true value} * 100$$

- iii. Completeness. Completeness shall be an objective assessment based on a review of records kept and actions taken.

Completeness shall be documented by each reviewer of the on-site analysis results when the laboratory analysis notebook and Operating Record is reviewed. Completeness shall include such items as errors of omission and commission.

- d. Precision requirements for samples with results less than ten ppm, shall be met if the duplicate also has a result of less than ten ppm. For the purpose of this plan and Analytical Procedure Method EC-0800, an instrument reading of less than ten ppm shall be recorded in the Laboratory Notebook as less than ten ppm.

7. Corrective Action Requirements.

- a. Corrective actions and re-analysis, if necessary, associated with the quality control checks in Table II-1-2 or quality assurance checks in Table II-1-3 shall be performed before proceeding with the analyses.
- b. When a sample analysis is waived, a required duplicate result may also be waived.
- c. If a control check does not pass and cannot be corrected by simple measures as defined in Table II-1-2, the following requirements apply:
 - i. Work shall be stopped and the Corporate Quality Assurance Manager or Environmental Engineer shall be informed.
 - ii. The reason for the failure shall be investigated and the cause corrected.
 - iii. A brief summary of the incident shall be documented in the laboratory analysis notebook or Operating Record.
 - iv. All analytical data associated with questionable procedures – from the previous acceptable control check to the failed control check – shall be examined for validity, and corrective action shall be taken as necessary and documented in the Operating Record.
- d. For fingerprint analyses, if a duplicate analysis is performed on a sample (e.g., re-analysis of the same sample or an analysis of a sample that is collected using the same sample collection procedure) and if the result of the duplicate analysis contradicts the management requirements for the waste or Quality Assurance Requirements, an evaluation of the data shall be conducted and a resolution of those data shall be approved by the Corporate Quality Assurance Manager. The waste shall be managed in accordance with that resolution.

8. Sample Disposal Requirements:
 - a. Materials associated with on-site analysis (gloves, paper towels, etc.) shall be managed as samples or wastes in accordance with the applicable provisions of UAC R315-2 and this Permit.
 - b. After the fingerprint methods have been performed, samples may be placed with the waste stream from which it originated for management.
 - c. Any liquid portion from performing fingerprint methods may be solidified and/or neutralized in the laboratory and either placed with the solid portions, or may be managed in accordance with the provisions of this Permit.
 - d. When liquid portions are solidified or when samples are neutralized, such operations shall be conducted in a laboratory container inside of an operating fume hood.
9. Assessments and Quality Assurance Reports To Management.
 - a. Each quarter, the QAM or designee shall perform an assessment of the on-site laboratory data and the performance of the on-site waste analysis system covered comprehensively by this WAP.
 - b. The QAM or designee shall prepare a report of the assessment that summarizes findings based on review of field techniques, data accuracy, precision, and completeness.

(Note: This assessment need not be comprehensive, nor must the same assessment approach be taken each quarter. However, all aspects of this plan shall be assessed each calendar year)
 - c. The report shall include any quality assurance problems identified by the reviewer and recommended solutions.
 - d. This report shall be submitted to the Senior Vice President of Compliance and Permitting according to the schedule outlined below, unless additional time for assessment or completing the report is approved by the Senior Vice President of Compliance and Permitting. If additional time is approved it shall be justified. Late starts or lack of effort shall not sufficient reasons for extension. A copy of the report shall be kept in the Operating Record for five years.
 - e. Problems identified in previous audits shall be investigated to ensure that they have been corrected and recorded in the Operating Record.

Ending Dates for Each Audit Quarter	Reports Due Date
March 31	May 1
June 30	August 1
September 30	November 1
December 31	February 1

TABLE II-1-4
 RANDOM NUMBERS

10480	15011	01536	02011	81647	91646	69179	14194	62590
22368	46573	25595	85393	30995	89198	27982	53402	93965
24130	48360	22527	97625	76393	64809	15179	24830	49340
42167	93083	06243	61680	07856	16376	39440	53537	71341
37570	39975	81837	16656	06121	91782	60168	81305	49684
77921	06907	11008	42751	27756	53498	18602	70659	90655
99562	72905	56420	69994	98872	31016	71194	18738	44013
96301	91977	05463	07972	18876	20922	94595	56869	69014
89579	14342	63661	10281	17453	18103	57740	84378	25331
85475	36857	53342	53988	53060	59533	38867	62300	08158
28918	69578	88231	33276	70997	79936	56865	05859	90106
63553	40961	48235	03427	49626	69445	18663	72695	52180
09429	93969	52636	92737	88974	33488	36320	17617	30015
10365	61129	87529	85689	48237	52267	67689	93394	01511
07119	97336	71048	08178	77233	13916	47564	81056	97735
51085	12765	51821	51259	77452	16308	60756	92144	49442
02368	21382	52404	60268	89368	19885	55322	44819	01188
01001	54092	33362	94904	31273	04146	18594	29852	71585
52162	53916	46369	58586	23216	14513	83149	98736	23495
07056	97628	33787	09998	42698	06691	76988	13602	51851
48663	91245	85828	14346	09172	30168	90229	04734	59193
54164	58492	22421	74103	47070	25306	76468	26384	58151
32639	32363	05597	24200	13363	38005	94342	28728	35806
29334	27001	87637	87308	58731	00256	45834	15398	46557
02488	33062	28834	07351	19731	92420	60952	61280	50001
81525	72295	04839	96423	24878	82651	66566	14778	76797
29676	20591	68086	26432	56901	20849	89768	81536	86645
00742	57392	39064	66432	84673	40027	32832	61362	98947
05366	04213	25669	26422	44407	44048	37937	63904	45766
91921	26418	64117	94305	26766	25940	39972	22209	71500
00582	04711	87917	77341	42206	35126	74087	99547	81817
00725	69884	62797	56170	86324	88072	76222	36086	84637
69011	65795	95876	55293	18988	27354	26575	08625	40801
25976	57948	29888	88604	67917	48708	18912	82271	65424
09763	83473	73577	12908	30883	18317	28290	35797	05998
91567	42595	27958	30134	04024	86385	29880	99730	55536
17955	56349	90999	49127	20044	59931	06115	20542	18059
46503	18584	18845	49618	02304	51038	20655	58727	28168
92157	89634	94824	78171	84610	82834	09922	25417	44137
14577	62765	35605	81263	39667	47358	56873	56307	61607
98427	07523	33362	64270	01638	82477	66969	98420	04880
34914	63976	88720	82765	34476	17032	87589	40836	32427
70060	28277	39475	46473	23219	53416	94970	25832	69975
53976	54914	06990	67245	68350	82948	11398	42878	80287
76072	29515	40980	07391	58745	25774	22987	80059	39911
90725	52210	83974	29992	65831	38857	50490	83765	55657
64364	67412	33339	31926	14883	24413	59744	92351	97473
08962	00358	31662	25388	61642	34072	81249	35648	56891
95012	68379	93526	70765	10592	04542	76463	54328	02349
15664	10493	20492	38931	91132	21999	59516	81652	27195